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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/063,830	05/16/2002	Arthur S. Goldman	13249	6259

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EXAMINER	
POE, MICHAEL I	

ART UNIT	PAPER NUMBER
1732	

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/063,830	GOLDMAN ET AL.	
	Examiner	Art Unit	
	Michael I. Poe	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 21* is/are pending in the application.

4a) Of the above claim(s) *9,10,13,16 and 17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,11,12,14,15 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Amendments

1. Applicant's amendment filed on February 10, 2005 has been entered. Based upon the entry of this amendment, existing claims 1 and 14 have been amended, existing claims 18-20 have been canceled, and new claim 21 has been added. Claims 1-17 and 21 are currently pending.

Drawings

2. The drawings were received on February 10, 2005. These drawings are acceptable.

Election/Restrictions

3. Claims 9-10, 13, 16 and 17 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the replies filed on May 20, 2004 and July 6, 2004 and during the telephone interview on September 16, 2004. It is noted that newly added claim 21 is generic to all species.

Claim Objections

4. Claim 11 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Since claim 1 establishes that the polymer extrusion may comprise vinyl polymer and claim 11, as currently written, does not require that the polymer extrusion to be solely a vinyl polymer by using closed claim language such as "consisting of" or a different combination of materials, claim 11 fails to further limit claim 1.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-5, 7, 11 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,643,857 (Cousin et al.) in view of U.S. Patent No. 5,922,255 (McLeod).

Claims 1-5, 11 and 21

Cousin et al. teach a method of forming a racket frame including forming an elongate element (a preformed thermoplastic polymer extrusion; providing said preformed thermoplastic polymer extrusion) by extruding a mixture of a thermoplastic material and carbon fibers; allowing the elongate element to cool and solidify; introducing (filling) a polyurethane foam (polymer foam; polyisocyanate-based; polyurethane foam; said polyurethane foam is rigid closed-cell foam, semi-rigid closed-cell/open-cell foam or flexible open-cell foam; a support foam formed within said cavity) into cavities (at least one cavity) in the elongate element; heating the elongate element with the polyurethane foam therein to its softening temperature (a first temperature; said first temperature is the heat deflection temperature of the preformed polymer extrusion) by immersing the elongate element in a thermostat-controlled bath for example of silicone oil; bending the softened elongate element (said heated extrusion) as it is internally supported to prevent crushing by the polyurethane foam around a core (on a curved mandrill) to form a racket frame; and cooling the racket frame (extrusion) below its softening temperature (a second temperature) to set it into the shape of the racket frame (a curved polymer extrusion) (abstract; column 3, line 65 - column 4, line 2; column 4, line 42 - column 5, line 2; column 5, lines 63-66). Note that, although Cousin et al. do not specifically teach that the polymer foam is cured within the cavities, one of ordinary skill in the art would have obviously recognized that the urethane foam must obviously be cured to be capable of supporting the elongate element to prevent crushing. Note further that, although Cousin et al. do not specifically teach that the racket frame is removed from the core after cooling, one of ordinary skill in the art would have obviously recognized that the racket frame must obviously be removed from the core to allow the formed racket to serve its intended purpose.

Cousin et al. do not specifically teach that the thermoplastic material may include a vinyl polymer. However, McLeod teaches a method of manufacturing a racket frame including molding a racket frame out of a fiber reinforced thermoplastic resin material including long fibers and a flowable thermoplastic matrix material such as polyvinyl chloride (vinyl polymer) (column 4, line 36-50). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use polyvinyl chloride as the thermoplastic matrix material for the carbon fibers in the process of Cousin et al. as taught by McLeod to provide a racket frame made from a low-cost yet strong material as taught by McLeod.

Claim 7

The discussion of Cousin et al. as applied to claim 1 above applies herein.

Cousin et al. do not specifically teach that the polyurethane foam has a density of about 16 kg per cubic meter to about 320 kg per cubic meter. However, Cousin et al. further teach the cavities are filled with a polyurethane foam whose density is chosen in dependence on the final weight the racket is to have (column 3, line 65 - column 4, line 2). Since Cousin et al. recognize that the density of the foam is chosen based upon the desired weight of the racket, Cousin et al. recognize that the density of the foam is a result-effective. As such, one of ordinary skill in the art would have obviously determined the optimum density of the foam in the process of Cousin et al. through routine experimentation based upon the desired final weight of the racket, the racket construction, etc.

7. Claims 6, 8, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,643,857 (Cousin et al.) in view of U.S. Patent No. 5,922,255 (McLeod) and U.S. Patent No. 4,525,319 (Kaspe).

Claim 6

The discussion of Cousin et al. and McLeod as applied to claim 1 above applies herein.

Cousin et al. do not specifically teach that the second temperature is at least about 10 degrees Celsius less than the heat deflection temperature (e.g., the softening temperature) of the elongate element. However, Kaspe teaches a method for forming a single flange pipe adapter including softening the end portion of a resin pipe, bending the outer extremities of the heated end portion to cause the heated end portion to be flared outwardly, and cooling the outwardly flared end portion to set it in its final

configuration wherein the temperature and the timing of the heating and cooling vary depending on the nature and/or thickness of the thermoplastic resin used (column 1, line 47 - column 2, line 2; column 3, lines 33-39 and 48-61). Although Kaspe does not teach the specifically claimed cooling temperature, Kaspe obviously recognizes that the temperature and the timing of heating and cooling are result-effective variable based upon the nature of the thermoplastic resin used in bending processes for thermoplastic materials. As such, in view of the teachings of Kaspe, one of ordinary skill in the art would have obviously determined the optimum temperature and timing of heating and cooling in the process of Cousin et al. in view of McLeod through routine experimentation based upon the composition, thickness and nature of the thermoplastic material used for the racket frame.

Claim 8

The discussion of Cousin et al. and McLeod as applied to claim 1 above applies herein.

Although Cousin et al. teach that the elongate element can be heated by a bath of desired temperature, Cousin et al. do not specifically teach that the bath may be a glycol bath. Kaspe further teach that heating in a glycol bath or other baths such as oil baths have been suitable for heating the end portion of the pipe (said extrusion is heated to said first temperature in a glycol bath). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a glycol bath in the process of Cousin et al. in view of McLeod instead of the silicone oil bath as taught by Kaspe to provide a cheaper and more efficient heating medium for the bath in the process of Cousin et al. in view of McLeod.

Claim 14

Cousin et al. teach a method of forming a racket frame including forming an elongate element (a preformed extrusion; providing said preformed extrusion) by extruding a mixture of a thermoplastic material and carbon fibers; allowing the elongate element to cool and solidify; introducing (filling) a polyurethane foam into cavities (at least one cavity) in the elongate element; heating the elongate element with the polyurethane foam therein to its softening temperature by immersing the elongate element in a thermostat-controlled bath for example of silicone oil; bending the softened elongate element (heated extrusion) as it is internally supported to prevent crushing by the polyurethane foam around a core (on a curved mandrill) to form a racket frame; and cooling the racket frame (extrusion) below its

softening temperature to set it into the shape of the racket frame (a curved polymer extrusion) (abstract; column 3, line 65 - column 4, line 2; column 4, line 42 - column 5, line 2; column 5, lines 63-66). Note that, although Cousin et al. do not specifically teach that the urethane foam is cured within the cavities, one of ordinary skill in the art would have obviously recognized that the urethane foam must obviously be cured to be capable of supporting the elongate element to prevent crushing. Note further that, although Cousin et al. do not specifically teach that the racket frame is removed from the core after cooling, one of ordinary skill in the art would have obviously recognized that the racket frame must obviously be removed from the core to allow the formed racket to serve its intended purpose.

Cousin et al. do not specifically teach that the preformed extrusion may include vinyl polymer thermoplastic. However, McLeod teaches a method of manufacturing a racket frame including molding a racket frame out of a fiber reinforced thermoplastic resin material including long fibers and a flowable thermoplastic matrix material such as polyvinyl chloride (vinyl polymer thermoplastic) (column 4, line 36-50). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use polyvinyl chloride as the thermoplastic matrix material for the carbon fibers in the process of Cousin et al. as taught by McLeod to provide a racket frame made from a low-cost yet strong material as taught by McLeod.

Cousin et al. in view of McLeod do not specifically teach that heating the extrusion to about 70 degrees Celsius and cooling the extrusion to a temperature less than about 60 degrees Celsius. However, Kaspe teaches a method for forming a single flange pipe adapter including softening the end portion of a resin pipe, bending the outer extremities of the heated end portion to cause the heated end portion to be flared outwardly, and cooling the outwardly flared end portion to set it in its final configuration wherein the temperature and the timing of the heating and cooling vary depending on the nature and/or thickness of the thermoplastic resin used (column 1, line 47 - column 2, line 2; column 3, lines 33-39 and 48-61). Although Kaspe does not teach the specifically claimed heating and cooling temperatures, Kaspe obviously recognizes that the temperature and the timing of heating and cooling are result-effective variable based upon the nature of the thermoplastic resin used in bending processes for thermoplastic materials. As such, in view of the teachings of Kaspe, one of ordinary skill in the art would have obviously determined the optimum temperature and timing of heating and cooling in the process of

Cousin et al. in view of McLeod through routine experimentation based upon the composition, thickness and nature of the vinyl polymer used for the racket frame.

Claim 15

The discussion of Cousin et al., Kaspe and McLeod as applied to claim 14 above applies herein.

Although Cousin et al. in view of McLeod teach that the elongate element can be heated by a bath of desired temperature, Cousin et al. in view of McLeod do not specifically teach that the bath may be a glycol bath. Kaspe further teach that heating in a glycol bath or other baths such as oil baths have been suitable for heating the end portion of the pipe (said extrusion is heated to said first temperature in a glycol bath). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a glycol bath in the process of Cousin et al. in view of McLeod instead of the silicone oil bath as taught by Kaspe to provide a cheaper and more efficient heating medium for the bath in the process of Cousin et al. in view of McLeod.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,643,857 (Cousin et al.) in view of U.S. Patent No. 5,922,255 (McLeod) and U.S. Patent No. 5,164,419 (Bartlett et al.).

Claim 12

The discussion of Cousin et al. and McLeod as applied to claim 1 above applies herein.

Although Cousin et al. in view of McLeod teach filling the cavities by injection of a polyurethane foam from a mixing head, Cousin et al. in view of McLeod do not specifically teach that the polyurethane foam comprises polyisocyanate, at least one active hydrogen-containing compound, and a blowing agent. However, Bartlett et al. teach that it is well known to prepare polyurethane foams by reacting organic polyisocyanate with an active hydrogen-containing compound in the presence of a blowing agent or agents (a plurality of ingredients comprising polyisocyanate, at least one active hydrogen-containing compound and a blowing agent) (column 2, lines 30-46). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the well known process of preparing a polyurethane foam in the process of Cousin et al. in view of McLeod as taught by Bartlett et al. to provide a reliable and readily available method of forming the polyurethane foam in the process of Cousin et al. in view of McLeod.

Response to Arguments

9. Applicant's arguments, see page 8, 2nd and 3rd paragraphs, filed February 10, 2005, with respect to objections to the drawings and the rejections under 35 U.S.C. 112, 2nd paragraph, of claim 4 have been fully considered and are persuasive. The objections to the drawings and the rejections under 35 U.S.C. 112, 2nd paragraph, of claim 4 have been withdrawn herein.

10. Applicant's arguments with respect to the prior art rejections of claims 1-8, 11, 12, 14, 15 and 21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 3,608,215; Japanese Patent Publication No. JP 09-322950 A; and German Patent Publication No. DE 4031180 A1 have been cited of interest to show the state of the art at the time the invention was made.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael I. Poe whose telephone number is (571) 272-1207. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael I. Poe
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Art Unit 1732

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SUPERVISORY PATENT EXAMINER